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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/972,814	10/05/2001	Hyun-Woo Lee	678-752 (P9924)	6754
28249	7590	10/31/2006	EXAMINER	
DILWORTH & BARRESE, LLP 333 EARLE OVINGTON BLVD. UNIONDALE, NY 11553			LY, ANH VU H	
			ART UNIT	PAPER NUMBER
			2616	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/972,814

Applicant(s)

LEE ET AL.

Examiner

Anh-Vu H. Ly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8,11,12,14,15,17,18,21,22,24,25 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8,11,12,14,15,17,18,21,22,24,25 and 27 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date July 03, 2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5-8, 11-12, 14-15, 17-18, 21-22, 24-25, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art disclosed in the specification on pages 1-10 and Figs. 1-10 and further in view of Heikkinen (WO 95/32558) and further in view of Lamoureux et al (US Patent No. 6,330,458 B1). Hereinafter, referred to as APA, Heikkinen, and Lamoureux.

With respect to claims 1, 5, 8, and 18, APA discloses a transmission apparatus in a CDMA mobile communication system (Fig. 10) for transmitting a modulated radio signal using a plurality of antennas (Fig. 10, elements ANT1 and ANT2), the transmission apparatus comprising:

a power amplifier for amplifying the radio signal in a transmission period (Fig. 10, element 1026 or 1038);

wherein the transmission period (Ts_0 - Ts_6) and the non-transmission period ($DwPTS$, GP , and $UpTS$) comprise a sub-frame (Fig. 3)

APA does not disclose a controller for generating a switching control signal and a switch for switching the amplified radio signal from the power amplifier between a first and a second antenna in response to the switching control signal.

Heikkinen discloses controller (Fig. 3, element 35) for generating a switching control signal associated with the radio signal amplified by the power amplifier (Fig. 3, element 32) and a switch (Fig. 3, element 33) for switching the amplified radio signal from the power amplifier between a first and a second antenna (Fig. 3, elements 34a, 34b, and 34c) in response to the switching control signal.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include generating a control signal for switching radio signal between a first and a second antenna in APA' system, as suggested by Heikkinen, to reduce internally generated heat in each antenna and to promote the endurance of each antenna.

Neither APA nor Heikkinen disclose that the switching control signal is generated in a non-transmission period, wherein the non-transmission is a guard period in each sub-frame for separating the sub-frames, and wherein the guard period is located at the end of each sub-frame.

Lamoureux discloses that a control signal is generated in a guard period of time slots of a frame (col. 3, lines 2-3). Lamoureux discloses in Fig. 4, a frame comprises a number of time slots (each time slot is considered as a sub-frame by the Examiner). Further, each time slot or

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each sub-frame is separated by a guard 422, 424, 426, and etc...In other words, each guard time is located at the end of a previous slot or a previous sub-frame and beginning a next slot or a next sub-frame. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate the switching control signal during the guard period for switching between antennas in APA's system, as suggested by Lamoureux, to prevent users from hearing any signal disturbance such as noise that can occur during the switching between antennas.

With respect to claims 2 and 6 APA discloses a TSTD scheme (Fig. 10). APA does not disclose that wherein the controller generates the switching control signal in a guard period of the last time slot among the time slots of the frame. Lamoureux discloses that the controller generates the switching control signal in a guard period of the last time slot among the time slots of the frame associated with the radio signal amplified by the power amplifier (col. 3, lines 2-3, the switching between antenna elements occurs during the guard times of the time slots. Herein, the guard times can be any guard time of any time slots, including the first, second, third, etc... and last guard time of last time slot among the time slots). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the feature of generating the control signal in a guard period of time slots in APA's system, as suggested by Lamoureux, to eliminate any disturbance to users data transmissions.

With respect to claims 3 and 7, APA discloses that wherein the guard period has a length of 96 chips (Fig. 1, GP has 96 chips).

With respect to claims 11, APA discloses that wherein the guard period has a length of 96 chips (Fig. 3, GP has a length of 96 chips).

With respect to claims 12 and 22, APA discloses that wherein the guard period is a downlink non-transmission period of a sub-frame (Fig. 3, DwPTS).

With respect to claims 14 and 24, APA discloses that wherein the downlink non-transmission period is 875 usec (page 18, lines 16-18).

With respect to claims 15 and 25, APA discloses that wherein the guard period is an uplink non-transmission period of the sub-frame (Fig. 3).

With respect to claims 17 and 27, APA discloses that wherein the uplink non-transmission period is 825 usec (page 18, lines 21-22).

With respect to claim 21, APA discloses that wherein the guard period has a length of 16 chips (Fig. 4, GP has a length of 16 chips).

Allowable Subject Matter

3. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments filed August 23, 2006 have been fully considered but they are not persuasive.

Applicant argues in page 8 that none of the references teach that the transmission period and the non-transmission period comprise a sub-frame, that the non-transmission period is a guard period in each sub-frame for separating the sub-frames, and that the guard period is located at the end of each sub-frame. Examiner respectfully disagrees. APA discloses in Fig. 3, that the transmission period and non-transmission period comprise a sub-frame. Further, Lamoureux discloses in Fig. 4, a frame comprises a number of time slots (each time slot is considered as a sub-frame by the Examiner). Further, each time slot or each sub-frame is separated by a guard 422, 424, 426, and etc...In other words, each guard time is located at the end of a previous slot or a previous sub-frame and beginning a next slot or a next sub-frame. Therefore, the prior art of record teaches the claimed invention.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh-Vu H. Ly whose telephone number is 571-272-3175. The examiner can normally be reached on Monday-Friday 7:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to be 'S. H. Z.', written over a horizontal line.

avl